



CASSINI TOST_264 SEGMENT

Rev 264 Handoff Package

Segment Boundary 2017-063T22:20:00 – 2017-065T20:35:00

08 Aug 2016

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SMT Report, Timeline, SPASS

Science Highlights

Notes & Liens

This document has been reviewed and determined not to contain export controlled technical data

SMT Report

TOST 264

DATA VOLUME SUMMARY --- TRANSFER FRAME OVERHEAD INCLUDED (80 BITS PER 8800-BIT FRAME)

DOWNLINK PASS NAME	Start		End		OBSERVATION_PERIOD						DOWNLINK_PASS								
	doy	hh:mm	doy	hh:mm	P4			P5	RECORDED		PLAYBACK								
					START (Mb)	SCI (Mb)	HK+E (Mb)	TOTAL (Mb)	CPACTY (Mb)	MRGN (Mb)	OPNAV (Mb)	SCI (Mb)	ENGR (Mb)	TOTAL (Mb)	CPACTY (Mb)	MARGN (Mb)	NET_MARGN (Mb)	(%)	CAROVR (Mb)
SP_264EA_G70METNON065_PRIME	065	09:05	065	17:20	0	1882	147	2029	3322	1293	0	397	49	2475	2385	-90	1	0%	90
SP_264EA_C34BWGNON065_PRIME	065	17:20	065	20:35	90	0	0	90	3322	3233	0	148	19	257	258	1	1	1%	0

SSR PARTITION SIZE SUMMARY - SELECTED SSR CONFIGURATION: DOUBLE

SSR A/B			
OBSERVATION PERIOD	P4 Size (Frames)	P5 Size (Frames)	P6 Size (Frames)
SP_264NA_OBSERV063_NA	188954	10	38863

DATA VOLUME REPORT --- TRANSFER FRAME OVERHEAD NOT INCLUDED

Event	Start do	End do	CAPS (Mb)	CDA (Mb)	CIRS (Mb)	INMS (Mb)	ISS (Mb)	MAG (Mb)	MIMI (Mb)	RADAR (Mb)	RPWS (Mb)	UVIS (Mb)	VIMS (Mb)	PROBE (Mb)	ENGR (Mb)	TOTAL (Mb)
OBSERVATION NOR	063 22:20	065 09:05	0.0	65.6	459.6	12.5	900.0	61.8	106.3	0.0	163.9	0.0	95.0	0.0	145.2	2009.9
SP_264EA_G70METNON065_PRIME	065 09:05	065 17:20	0.0	15.6	78.3	3.0	0.0	14.7	25.2	0.0	252.5	4.5	0.0	0.0	0.0	393.8
SP_264EA_C34BWGNON065_PRIME	065 17:20	065 20:35	0.0	6.1	0.0	1.2	0.0	5.8	9.9	0.0	122.1	1.8	0.0	0.0	0.0	146.9
DAILY TOTAL SCIENCE	063 22:20	065 20:35	0.0	87.2	537.9	16.7	900.0	82.3	141.5	0.0	538.6	6.3	95.0	0.0	145.2	
TOTAL RECORDED (OPNAV data not included)			0.0	87.2	537.9	16.7	900.0	82.3	141.5	0.0	538.6	6.3	95.0	0.0		

TOST_264 Master Timeline

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264TI	489904					
Start Time	End Time	Prime Activity	Obs. Detail	Op Mode	TLM Mode	Comments
2017-063T22:20:00	2017-063T23:00:00	SP Turn to WP	NEG_Y to Titan / NEG_X to Sun	DFPW Normal	S_N_ER_3	Secondary is preferred by MIMI
2017-063T23:00:00	2017-064T04:26:00	ISS	(TC1a, TC1b, TN1a, TN2c, TN2d)	DFPW Normal	S_N_ER_3	CIRS (collaborative 1 hour FP3 then 1 hour FP4 on north pole) and VIMS (non-collaborative) riders during this segment--good view of North Pole
2017-064T04:26:00	2017-064T05:26:00	ISS_264TI_CLOUD001_PIE	(TC1a, TC1b, TN1a, TN2c, TN2d)	DFPW Normal	S_N_ER_3	TOST priority 1: approaches north of Menrva, high northern lats from leading-to-sub-Saturn side, recedes over sub-Saturn side: >60°N 130-260°W!!
2017-064T05:26:00	2017-064T11:26:00	ISS	(TC1a, TC1b, TN1a, TN2c, TN2d)	DFPW Normal	S_N_ER_3	Collaboratives as above
2017-064T11:26:00	2017-064T12:26:00	ISS_264TI_CLOUD002_PIE	(TC1a, TC1b, TN1a, TN2c, TN2d)	DFPW Normal	S_N_ER_3	
2017-064T11:53:45		CLOSEST APPROACH				
2017-064T12:26:00	2017-064T18:26:00	ISS	(TC1a, TC1b, TN1a, TN2c, TN2d)	DFPW Normal	S_N_ER_3	Collaboratives as above
2017-064T18:26:00	2017-064T19:26:00	ISS_264TI_CLOUD003_PIE	(TC1a, TC1b, TN1a, TN2c, TN2d)	DFPW Normal	S_N_ER_3	
2017-064T19:26:00	2017-065T01:26:00	ISS	(TC1a, TC1b, TN1a, TN2c, TN2d)	DFPW Normal	S_N_ER_3	Collaboratives as above
2017-065T01:26:00	2017-065T02:26:00	ISS_264TI_CLOUD004_PIE	(TC1a, TC1b, TN1a, TN2c, TN2d)	DFPW Normal	S_N_ER_3	
2017-065T02:26:00	2017-065T06:55:00	ISS	(TC1a, TC1b, TN1a, TN2c, TN2d)	DFPW Normal	S_N_ER_3	Collaboratives as above
2017-065T06:55:00	2017-065T07:35:00	SP Turn to Earth for downlink	XBAND to Earth / POS_X to NEP	DFPW Normal	S_N_ER_3	SRU. DLWG dedicated as Rolling pass
2017-065T07:35:00	2017-065T09:05:00	Ybias Gap		DFPW Normal	S_N_ER_3	
2017-065T09:05:00	2017-065T17:20:00	Goldstone 70M		DFPW Normal	RTE_N_SPB	Rolling/SRU
2017-065T17:20:00	2017-065T20:35:00	Canberra 34M BWG		DFPW Normal	RTE_N_SPB	No Roll

TOST_264 SPASS

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Request	Riders	Start (SCET)	Start (Epoch)	Duration	End	Primary	Secondary	Comments
Sequence S98, length = 70 days		2017-034T07:05:00		070T07:50:00	2017-104T14:55:00			
TOST_264 Segment		2017-063T22:20:00		001T22:15:00	2017-065T20:35:00			
SP_264TI_WAYPTTURN063_PRIME		2017-063T22:20:00		000T00:40:00	2017-063T23:00:00	NEG_Y to Titan	NEG_X to Sun	
NEW WAYPOINT		2017-063T23:00:00		001T08:35:00	2017-065T07:35:00	NEG_Y to Titan	NEG_X to Sun	
ISS_264TI_LRMONITOR001_PRIME	C, V	2017-063T23:00:00		000T05:26:00	2017-064T04:26:00	ISS_NAC to Titan	NEG_X to Sun	Collaborative Rider(s): CIRS
ISS_264TI_CLOUD001_PIE	C, V	2017-064T04:26:00		000T07:00:00	2017-064T11:26:00	ISS_NAC to Titan	NEG_X to Sun	Collaborative Rider(s): CIRS
ISS_264TI_CLOUD002_PIE	C, V	2017-064T11:26:00		000T07:00:00	2017-064T18:26:00	ISS_NAC to Titan	NEG_X to Sun	Collaborative Rider(s): CIRS
264TI (nt) TITAN Inbound 489903.9 km		2017-064T11:53:45		000T00:00:01	2017-064T11:53:46			
ISS_264TI_CLOUD003_PIE	C, V	2017-064T18:26:00		000T07:00:00	2017-065T01:26:00	ISS_NAC to Titan	NEG_X to Sun	Collaborative Rider(s): CIRS
ISS_264TI_CLOUD004_PIE	C, V	2017-065T01:26:00		000T05:29:00	2017-065T06:55:00	ISS_NAC to Titan	NEG_X to Sun	Collaborative Rider(s): CIRS
SP_264EA_DLTURN065_PRIME		2017-065T06:55:00		000T00:40:00	2017-065T07:35:00	XBAND to Earth	POS_X to NEP	
NEW WAYPOINT		2017-065T07:35:00		000T13:00:00	2017-065T20:35:00	XBAND to Earth	POS_X to NEP	
SP_264EA_YGAP065_PRIME	E	2017-065T07:35:00		000T01:30:00	2017-065T09:05:00	XBAND to Earth	POS_X to NEP	
SP_264EA_G70METNON065_PRIME	C	2017-065T09:05:00		000T08:15:00	2017-065T17:20:00	XBAND to Earth	Rolling/SRU	SRU.
SP_264EA_C34BWGNON065_PRIME		2017-065T17:20:00		000T03:15:00	2017-065T20:35:00	XBAND to Earth	POS_X to NEP	

TOST_264 High-Priority Observations

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TOST_264 Summary of PIEs and Other High Priority Observations							
Discipline	CIMS Request Name	Start Time	End Time	Flexibility in secondary pointing	Comments (e.g., pointing tolerance, uniqueness; relative priority)	Science Traceability Matrix Code(s)	Pointing designer POC
Titan	ISS_264TI_CLOUD001_PIE	2017-064T04:26:00	2017-064T11:26:00	Flexible	Includes CIRS Collaborative	TC1a, TC1b, TN1a, TN2c, TN2d	Jason Perry <volcanopele@gmail.com>
Titan	ISS_264TI_CLOUD002_PIE	2017-064T11:26:00	2017-064T18:26:00	Flexible	Includes CIRS Collaborative	TC1a, TC1b, TN1a, TN2c, TN2d	Jason Perry <volcanopele@gmail.com>
Titan	ISS_264TI_CLOUD003_PIE	2017-064T18:26:00	2017-065T01:26:00	Flexible	Includes CIRS Collaborative	TC1a, TC1b, TN1a, TN2c, TN2d	Jason Perry <volcanopele@gmail.com>
Titan	ISS_264TI_CLOUD004_PIE	2017-065T01:26:00	2017-065T06:55:00	Flexible	Includes CIRS Collaborative	TC1a, TC1b, TN1a, TN2c, TN2d	Jason Perry <volcanopele@gmail.com>

March 4 (DOY 063) – TOST_264 is a Titan 489,904 km flyby with ISS as Prime Observer throughout. ISS will begin the segment with imaging of Titan's surface over northern latitudes, to compare with ISS images from late 2013 and early 2014 to look for surface changes.

CIRS and VIMS will each ride along with ISS. CIRS, as a collaborative rider, will acquire data spanning the north pole, providing latitude information about the distribution of gases in the summer hemisphere. VIMS will monitor the evolution of cloud coverage at the North Pole.

March 5 (DOY 064) – On DOY 064, ISS begins its PIE campaign: a series of medium-resolution (~2-3 km) global-scale mosaics, to observe Titan's surface and atmosphere over northern mid-latitudes at Titan's leading hemisphere during inbound and near C/A, and over northern mid-latitudes at the sub-Saturnian hemisphere during outbound. This series of observations over ~32 hours allows ISS to monitor Titan to track clouds and the evolution thereof, which is of particular scientific interest as Titan's northern summer equinox approaches.

Between each mosaic, ISS will continue surface imaging over northern latitudes from inbound to outbound, as described in DOY 063. The outbound is particularly noteworthy, because the geometry of this flyby makes it possible for ISS to fill the gap that remains in surface mapping coverage at northern mid-latitudes on the sub-Saturnian hemisphere.

CIRS, again as a collaborative (during non-PIE imaging), and VIMS will each continue to ride along with ISS.

TOST_264 Science Highlights (2/2)

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March 6 (DOY 065) – Continuation of ISS objectives above on outbound, with CIRS collaborative and VIMS riding along.

Playback of the observation data will occur over two tracks: the Goldstone 70M downlink, followed immediately by a Canberra 34M BWG.

- Pointing:
 - Waypoint secondaries chosen per science request, but close to RBOT-friendly RA/DECs
 - Rolling Downlink requested, but induces SRU violation and CIRS heating (max CIRS delta-T is 2.02 K)
 - Using “Rolling/SRU” for 8h15m downlink (5hr & 2hr rolls) followed by “No Roll” for 3h15m
 - CIRS delta-T at end of downlink is 0.6 K
- Data Volume:
 - No carryover to next segment
 - No SMT warmings
- DSN:
 - Original DSN plan was G70/C70 – downgraded the C70 to C34 to avoid Juno conflict (Rev L spreadsheet)
 - 30 Mb cut to accommodate decreased data volume downlink capacity
 - No extended DSN maintenance
 - No ap_downlink report check warmings
- Resource Checker:
 - No open items
- Opmodes:
 - ORS only – no issues
- Hydrazine:
 - No RCS, not applicable
- Special Activities:
 - Waiver likely for SP Rolling Downlink Heating

Liens

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Sequence Liens (should all be SPLAT items):

- None